intakes of fruits, vegetables, whole-grains, dairy and dairy components, calcium, vitamin D, whey protein, as well as monounsaturated and *n*-3 fatty acids.
Conclusions: There was a paucity of information on potential benefits of traditional dietary patterns from the Asia-Pacific region. Future research based on well-designed RCTs or prospective trials could extend the value of such dietary patterns to other regions of the world.
Funding source(s): N/A.

EFFICACY OF THE PALAEOLITHIC DIET IN HEALTHY FEMALE SUBJECTS ON CARDIOVASCULAR, METABOLIC AND ANTHROPOMETRIC OUTCOMES

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Background/Aims: To compare the efficacy of the palaeolithic diet and the AGHE in terms of metabolic and cardiovascular risk factors and body composition over a 4-week dietary intervention.
Methods: Thirty nine healthy women (mean ± SD age 47 ± 13 y and BMI 27 ± 4 kg/m^2), were randomised to an *ad libitum* palaeolithic ($n = 22$) or AGHE ($n = 17$) diet for 4 weeks. A 3-day weighed food record (WFR), and blood and urine samples were collected pre- and post-intervention. Within and between group analyses were performed using paired *t*-tests or Mann-Whitney and independent *t*-tests, respectively.
Results: Weight loss occurred in both groups, with significantly greater loss (-3.2 ± 1 kg vs. -1.2 ± 1 kg, $p < 0.001$) and reduction in waist circumference (3.3 ± 2 cm vs. 1.5 ± 2 cm, $p < 0.05$) in the palaeolithic group. A 7-9% mean reduction in total and LDL-cholesterol was observed in both groups with no difference between groups. Red cell folate (980 ± 300 vs. 751 ± 149 nmol/L, $p < 0.05$) and plasma β-carotene (2.41 ± 2 vs. 1.62 ± 1 μmol/L, $p < 0.05$) were significantly higher in the palaeolithic group, indicative of the increased fruit and vegetable consumption. There were no changes in α-carotene or lycopene, or in blood pressure, fasting insulin, glucose or C-reactive protein in either group.
Conclusions: The palaeolithic diet induced favourable changes in body composition over a short-term intervention period. The efficacy of the diet was comparable to other dietary patterns that reduce cardiovascular risk factors, however further studies are required to assess longer term health impacts and feasibility of the palaeolithic diet.
Funding source(s): N/A.

ASSOCIATION BETWEEN *N*-3 PUFA AND BLOOD LIPID PROFILE IN OLDER AUSTRALIANS

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Background/Aims: Dietary supplementation with *n*-3PUFA has been shown to retard atherogenic process, partly via improvements in lipoprotein profile. The objective of this study was to evaluate any association between *n*-3PUFA status and blood lipid levels in a group of older Australians.
Methods: Men ($n = 271$) and women ($n = 349$) aged 65-95 years living in the Central Coast Region of NSW were recruited. Fasting blood samples were analysed for total cholesterol (TC), TAG, HDL- and LDL-cholesterol. *n*-3PUFA status (%EPA plus %DHA) was determined from the fatty acid composition of erythrocyte membranes analysed by GC.
Results: *n*-3PUFA status was positively associated with plasma TC ($r = 0.082$, $p < 0.05$), LDL-cholesterol ($r = 0.088$, $p < 0.05$) and HDL-cholesterol ($r = 0.163$, $p < 0.001$), and negatively correlated with plasma TAG ($r = -0.217$, $p < 0.001$) levels. The association between *n*-3PUFA status and plasma TAG was stronger in females ($r = -0.279$, $p < 0.001$) than males ($r = -0.141$, $p < 0.05$) and the association between *n*-3PUFA status and HDL-cholesterol was evident in females only ($r = 0.177$, $p < 0.001$). The relationship between *n*-3PUFA status and TC or LDL-cholesterol levels was not significant when participants were stratified on gender. However, the correlation coefficient was larger and approached significance in the female group.
Conclusions: In this study *n*-3PUFA status was associated with an anti-atherogenic blood lipid profile in an older, high risk population in a sex-dependent manner. These findings support the development and implementation of dietary strategies designed to reduce the risk of cardiovascular disease by improving *n*-3PUFA status.
Funding source(s): ARC.

N-3 PUFA STATUS IS INVERSELY ASSOCIATED WITH TYPE 2 DIABETES MELLITUS IN OLDER AUSTRALIANS

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Background/Aims: The association between *n*-3PUFA status and risk of T2DM remains unclear. We have recently demonstrated a negative association between erythrocyte *n*-3PUFA levels and insulin resistance in obese children. This study was to determine whether *n*-3PUFA status is associated with T2DM in high risk older Australians.
Methods: A cross-sectional sample of older adults aged 65-95 years ($n = 620$) from the Central Coast Region, NSW were recruited. Diabetic status was determined according to World Health Organisation criteria. *n*-3PUFA status (%EPA plus %DHA) was determined by analysing the fatty acid composition of erythrocyte membranes by GC. Fasting blood sugar (BGL), insulin and HbA1c levels were measured by a commercial pathology service.
Results: Following application of exclusion criteria, 96 T2DM (females 42.7%; mean ± SD age 76.6 ± 6.0 years) and 512 non-T2DM (females 58.6%; age 77.8 ± 7.1 years) participants were included in the analysis. Erythrocyte *n*-3PUFA levels were significantly lower in T2DM than non-T2DM subjects (8.03 ± 2.0% vs. 8.57 ± 2.3%; $p = 0.03$). When participants were stratified by BMI, weight-dependent differences were evident with overweight/obese (≥ 27 kg/m^2) but not healthy/low weight (< 27 kg/m^2) subjects showing a negative correlation between *n*-3PUFA status and T2DM (Goodman-Kruskal's $\gamma = -0.267$; $p < 0.01$). An inverse relationship between *n*-3PUFA status and both fasting BSL ($r = -0.115$; $p = 0.02$) and HbA1c ($r = -0.115$; $p = 0.03$) was also detected in overweight/obese but not healthy/low weight participants. No association was found between *n*-3PUFA status and fasting insulin levels.
Conclusions: This is the first study to demonstrate a weight-dependent inverse relationship between long-term *n*-3PUFA status and T2D in older adults.
Funding source(s): ARC.

REPETITIVE GUT CHALLENGE REDUCES GASTRO-INTESTINAL SYMPTOMS AND MALABSORPTION OF CARBOHYDRATES DURING EXERTIONAL STRESS

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Background/Aims: The study aimed to determine if commonly reported and debilitating gastrointestinal symptoms (GIS) and carbohydrate malabsorption during exertional stress is altered by daily gut-challenge over two weeks.
Methods: Healthy endurance trained participants performed an initial gut-challenge trial (GC1) comprising 2 hours of running at 60% VO_{2max} whilst consuming 30 g carbohydrates (2:1 glucose-fructose, 10% weight:-volume) every 20 mins, followed by a 1 hour time trial. GIS were monitored every 10 mins during exercise using a 10 cm rating scale. Breath samples were collected every hour during exercise and recovery, and analysed via a Breathtracker Digital Microlyzer. After 10-days' gut training protocol comprising of 1 hour of running at 60% VO_{2max} whilst consuming 30 g carbohydrate (2:1 glucose-fructose, 10% weight:volume) every 20

mins, participants repeated the gut-challenge trial (GC2). Data were analysed by repeated measures ANOVA with post hoc and non-parametric equivalents (Friedman) where appropriate.
Results: Overall GIS were lower in GC2 compared to GC1 (accumulated rating: 86 cm vs. 508 cm; $p < 0.05$). Commonly reported GIS in GC1 included: belching, bloating, urge to vomit, stomach and intestinal pain, flatulence, urge to defecate and nausea; all subsiding in GC2. Taste fatigue and tolerance to food-fluid improved in GC2 compared to GC1 ($p < 0.05$). Breath hydrogen was lower in GC2 compared to GC1 (AUC: 1500 ± 589 ppm/300 min vs. 2580 ± 704 ppm/300 min; $p < 0.01$), with no significant change in breath methane observed.
Conclusions: Findings suggest that 10-days' of gut-challenge improves GIS, food-fluid intake ability and absorption during exertional stress. Ultimately, this may have substantial impact on exercise performance.
Funding source(s): N/A.

DIETARY SUPPLEMENTATION WITH FRUCTOSE OR GLUCOSE DOES NOT INFLUENCE BLOOD LIPIDS AND C—REACTIVE PROTEIN IN HEALTHY SUBJECTS

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Background/Aims: The mechanisms by which consumption of fructose rich diets may be linked with elevated risk of developing obesity and related chronic diseases remain debatable. Fructose-induced hyperlipidaemia and inflammation have been thought to mediate the adverse health effects of fructose. This study aimed to investigate the effects of dietary supplementation with fructose or glucose on blood lipids and low grade inflammation in healthy subjects.
Methods: This was a two-arm, parallel-design, randomised dietary intervention trial. Participants ($n = 24$) were asked to supplement their usual diets with 50 g of either fructose or glucose per day for a period of 4 weeks. Blood samples were collected at baseline and post intervention for the analysis of blood lipids, glucose, insulin and high sensitivity C-reactive protein (hs-CRP). An independent-sample *t*-test was conducted to compare the effects of fructose and glucose supplementation.
Results: Following dietary supplementation with fructose or glucose there was no significant difference in fasting blood insulin, glucose, total cholesterol, triglyceride, LDL-cholesterol, HDL-cholesterol, total/HDL cholesterol ratio and hs-CRP levels (all $p > 0.05$). The change in blood glucose, insulin, hs-CRP and lipid levels from baseline to post-intervention with fructose versus glucose were also similar.
Conclusions: Type of sugar (fructose or glucose) consumed does not influence blood lipid profile, glycaemic indices and low grade inflammation in healthy individuals.
Funding source(s): Hunter Medical Research Institute.

EFFECT OF NUTRITIONAL SUPPLEMENT THERAPIES IN THE PREVENTION OF ALZHEIMER'S DISEASE IN A TRANSGENIC MOUSE MODEL

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Background/Aims: The aim of this study was to examine the efficacy of diets containing (-)-epigallocatechin-3-gallate (EGCG), curcumin (Curc), DHA and α-lipoic acid (ALA) on reducing cognitive deficits and brain beta-amyloid (Aβ) levels in a transgenic Alzheimer's disease (AD) mouse model.
Methods: Sixty mice (age six months) were randomly assigned to one of six nutritional supplement groups (Control, Curc, Curc+EGCG+ALA, Curc+DHA+ALA, EGCG+DHA+ALA, Curc+EGCG+DHA+ALA) for 12 months. At 18 months of age, the cognitive effects of the nutritional supplements were evaluated behaviourally using the cued and contextual fear avoidance test. A commercially available assay was used for the detection and measurement of Aβ levels in the brain. Difference between groups was tested using one-way ANOVA.
Results: All nutritional supplement groups had lower frontal cortex Aβ42 levels compared to Controls ($p < 0.05$). Only the DHA+EGCG+ALA group had reduced frontal cortex Aβ40 levels compared to Controls ($p < 0.05$). No differences were observed in cerebellum Aβ42 levels, although the Curc+EGCG+ALA and DHA+EGCG+ALA groups did have lower cerebellum Aβ40 levels compared to Controls ($p < 0.05$). All nutritional supplement combination groups had significant increases in time spent freezing in the context, altered context and auditory cue conditions in the cued and contextual fear avoidance testing compared to Controls ($p < 0.05$).
Conclusions: The combination nutritional supplements in this study were effective at lowering brain Aβ42 levels and improving cognition. However there does not appear to be additional benefits from combinations of these nutritional components over a single nutritional supplement of Curc.
Funding source(s): NHMRC.

OMEGA-3 INDEX AND LIVER FAT: AN UNEXPECTED RELATIONSHIP

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Background/Aims: Non-alcoholic fatty liver disease (NAFLD) is an independent predictor of CVD. *n*-3 PUFA supplementation has been shown to improve NAFLD. This study aimed to examine the relationship of the Omega-3 Index (O3I; a biomarker of *n*-3 status) with liver fat (intrahepatic lipid concentration; IHL%).
Methods: Eighty overweight/obese, healthy, non-smoker adults (56 males) undertook MRI and proton magnetic resonance spectroscopy (^{1}H-MRS) to measure abdominal adiposity and IHL% within seven days of undergoing anthropometric measurements and providing a blood sample for biochemical and erythrocyte lipid analysis. Correlations with liver fat were examined and linear regression for the prediction of IHL% was performed. Mean ± SEM are reported.
Results: O3I was high in participants with (9.0 ± 0.3%) and without (8.4 ± 0.3%) NAFLD, and was positively correlated with IHL% ($r = 0.255$, $p = 0.029$), although further analysis revealed this was stronger and statistically significant for males ($r = 0.425$, $p = 0.001$) and not females ($r = 0.020$, $p = 0.925$). Linear regression showed that O3I and erythrocyte *n*-6:*n*-3 ratio together significantly explained 28% of the variance in IHL% ($p = 0.046$). The addition of BMI, waist and age raised the predictive power to 58% ($p < 0.001$). Further addition of biochemical markers (TAG, HDL, high-sensitive C-reactive protein) increased the total variance explained by the model to 66%.
Conclusions: In overweight/obese adults, O3I was unexpectedly positively associated with IHL%, however gender differences apparent in this cohort warrant further research. In overweight obese adults, simple anthropometric and demographic measures may be of equal or greater utility than erythrocyte PUFA analysis in identifying those at increased risk of NAFLD.
Funding source(s): Blackmores; Diabetes Australia.

EVALUATING AN INNOVATIVE FOODSERVICE APPROACH TO MALNUTRITION IN HEALTHCARE

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Background/Aims: Malnutrition in healthcare facilities remains an ongoing challenge. Opportunities exist to develop the foodservice system and engage this workforce to improve patient outcomes. The aim was to determine the effect of changing the foodservice system on anthropometry and patients' satisfaction with the foodservice.
Methods: The intervention consisted of a high-energy hospital menu and greater foodservice staff-patient interaction. Patients in subacute care